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Capt. Melville Willis Campbell Hepworth, C.B., R.D., R.N.R.

Cheltenham, 27th April, 1849—Ealing, 25th February, 1919.

The death of Captain Campbell Hepworth, following so soon after that of Mr. Allingham, is a serious loss to the Marine Division of the Meteorological Office, of which he had been Superintendent since 1899. Captain Hepworth was a son of the Rev. Robert Hepworth, of Cheltenham, and entered the merchant service. He had experience also in the Indian Marine and as a Naval Reserve officer in the Royal Navy. He was always keenly interested in the scientific as well as in the professional aspects of a sea-faring life, and when in command of liners on the Australian passage, both by the Suez Canal route and between Sydney and Vancouver, he made valuable observations on meteorology and currents. His appointment to the Marine Branch of the Meteorological Office gave him a welcome opportunity for encouraging meteorological observations at sea, and he was indefatigable in working up and publishing the results of the increasing number of well-kept meteorological logs. Amongst the very numerous publications of the Meteorological Office issued under his superintendence none owed more to his personal initiation and impetus than the monthly or quarterly pilot-charts of the oceans, showing the average conditions of weather, ocean-currents, and floating ice. Apart from the usefulness of these charts to the careful mariner, they served as fascinating companions for the scientific passenger and we have often been struck when at sea with the remarkable accuracy of the charts in fixing the positions of the limits of the trade winds at different seasons.

Captain Hepworth was engaged officially in many interesting pieces of oceanographical discussion, amongst which may be mentioned the surface isotherms of the Southern Ocean and the investigation of the ice drifts in the North Atlantic. More purely meteorological were his "Barometer Manual for the use of Seaman," and his "Seaman's Handbook of Meteorology." Almost his last work was the encouragement of rainfall observations at sea, and the

introduction on the back of the Monthly Pilot Charts of tables of rainfall from ship's logs.

Captain Hepworth communicated many valuable papers to different scientific and professional societies during the last thirty-five years, and an interesting selection of these was published in 1907 under the title of "Notes on Maritime Meteorology." The first paper in that volume is a lecture delivered to the United Service Institution in 1896, on "Meteorology: a factor in Naval Warfare," showing that Captain Hepworth took his naval responsibilities no less seriously than his nautical and scientific duties.

As a colleague Captain Hepworth was helpful and considerate, while his retiring and kindly disposition endeared him to innumerable friends afloat and ashore.

THE CARE OF THE BAROGRAPH,

Hints to Amateurs.

By Lieut. A. S. Martin-Smith.

I suppose that a considerable number of people include a barometer in the list of items, useful or otherwise, but generally considered necessary, to complete the equipment of the average home. Undoubtedly the primary consideration is very often not so much a question of its practical utility, but rather of its being a conventional article of furniture which is more or less ornamental, and at the same time, it is hoped, will convey to one's friends that which is not otherwise obvious, namely a suggestion of learning or at least of an interest in things scientific.

It also serves as a direct encouragement, if, indeed, such be necessary, to introduce as a topic of conversation that subject about which the man in the street is never tired of exposing his profound ignorance.

In most cases no effort is made to get the best out of the household barometer, and especially is this the case with the self-recording variety; and a casual glance into the windows of the shops of most opticians will show that insufficient care seems to be taken by even the very people whose business it is to exhibit them for sale.

I am not, however, concerned here with these people, but rather with the private individual who really does take an intelligent interest and a certain amount of justifiable pride in his barograms, which could be, but rarely are, made use of in investigations. I invite such a person to examine his records and ask himself whether or no his traces are as near perfection as the limitations of his instrument will permit.

In any investigation of line squalls or similar phenomena, an

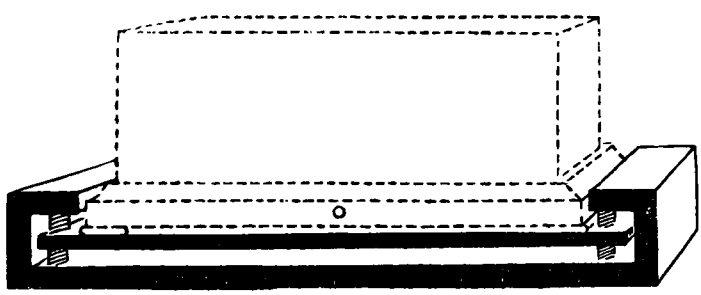
examination of barograms should disclose well-defined sudden oscillations in the trace at or about the time of the occurrence. Unless the instrument receives judicious treatment and adjustment and is carefully timed, the records will prove of little or no value for future reference in such cases.

It is quite a simple matter to ink the pen-nib properly and not a very difficult operation to reduce to a minimum the pressure of the pen against the paper, yet how seldom is this done. Perhaps it would be the lesser evil to underestimate the quantity of ink required and to err on the side of having too slight a contact of pen with paper.

One frequently finds blurred traces caused by a faulty pen; and sometimes a succession of vertical intervals is the only indication of what in reality should be represented by a continuous curve. This is due to an excess of friction which prevents any movement of the pen when it proves stronger than the impulse created by the compression or otherwise of the vacuum chambers.

Granted, however, every care has been taken in these details, there is still a difficulty to be overcome.

There is the question of jolts and jars due to irrepressible domestic activity and careless shutting of doors and shaking of floors inseparable from most houses, this in addition to occasional accidental jostling of the instrument itself. To eliminate, or, at least, modify



this disturbing effect, some years ago, I constructed a simple shock-absorbing contrivance which has certainly answered the purpose very well indeed. The barograph is placed upon a wooden platform which is supported above and below, at both ends, by spiral springs, borrowed from some spring dumb-bells, as shown in the accompanying illustration.

The principle is not new, but I have not heard of its application in this direction and can recommend its use to those in similar circumstances who desire to obtain the best results from what for the individual can prove to be for practical purposes the most interesting and useful of all meteorological instruments.

ROYAL METEOROLOGICAL SOCIETY.

THE usual monthly meeting of this Society was held on Wednesday February 19th, at 70, Victoria Street, S.W.. Sir Napier Shaw, F.R.S., President, in the Chair.

Dr. S. Chapman read a paper on "The lunar tide in the Earth's atmosphere." The lunar tidal variation of barometric pressure had been well determined at Batavia, from fifty years' hourly records, and from data extending over about five years in each case at St. Helena, Singapore, Rome and Samoa. As very little was known about its dependence on latitude, season, and the distance, declination and phase of the moon, a new and detailed discussion has been made of thirty and twenty-eight years' records of barometric pressure at Batavia and Hong Kong, respectively. The results were considered alongside the pre-existing values from the stations above-named, together with the Greenwich determination recently published in in the *Quarterly Journal* of the Royal Meteorological Society. The amplitude varies approximately as the fourth power of the cosine of the latitude, while the phase varies somewhat irregularly from 33° (Samoa) to 114° (Greenwich), where 90° corresponds to the occurrence of maximum pressure when the moon is on the meridian. No dependence on lunar phase or declination was detected, while as regards the moon's distance, an increase of amplitude from apogee to perigee was observable, though less than the increase in the tide-producing force. Distinct evidence of a seasonal variation of amplitude and phase was shown by both the Hong Kong and Batavia determinations. The conclusion was that the lunar atmospheric tide is not a simple tidal phenomenon, but is complicated by other effects, notably by resonance with an adjacent free period of vibration of the atmosphere, and possibly also by more local causes, such as the rise and fall of the ocean.

Major G. I. Taylor spoke on the effect of resonance and the wind variations due to variations in pressure. Mr. E. C. Barton, Mr. W. W. Bryant and Mr. F. J. W. Whipple also took part in the discussion.

Mr. Miller Christy read a paper, entitled, "The Gunfire on the Continent during 1918 : its audibility at Chignal St. James, near Chelmsford." Observations on the audibility of the continental gunfire have been made by the author for four years. The results for previous years were brought forward in earlier papers. In 1918 the first sounds were heard on the evening of May 8th and the last on August 26th, thus confirming previous experience that there is audibility at the writer's post of observation in Essex only during the summer months. The period of audibility in 1918 amounted to 15 weeks, 5 days. In previous years the periods were : 1915, 17 weeks, 3 days ; 1916, 15 weeks ; 1917, 19 weeks, 4 days. The

average for the four years is 17 weeks. A feature of 1918 was that the sounds were less loud and distinct than in previous years, and there were none of the periods of extreme loudness which had before been noticed.

Mr. J. E. Clark said that at Purley he heard distant gunfire on 48 days, between May 31st and August 25th. It was heard daily from July 25th to August 11th. Mr. E. C. Barton quoted from a report of a bombardment in Upper Alsace on January 21st, 1917, which was audible on the slopes of the Jura and in Switzerland. Atmospheric conditions seemed to be important for the air was clear where firing was heard and foggy where it was not heard.

Mr. Miller Christy also contributed some notes on two whirlwinds in Essex. On October 27th, 1916, the village of Writtle suffered damage to the extent of £3,000 to £4,000, and thousands of oaks and elms were badly damaged. On July 27th, 1918, the parish of Gosfield suffered, though damage was less severe, the track of the whirl being mostly in open country. Major Blair said the great storms of the United States were similar though of longer duration. The sharply defined and narrow track of the storm was also characteristic.

The following candidates were balloted for and elected Fellows of the Society :—Capt. K. G. Stacy Hatfield, G. C. Singleton, Donald Stevenson, Adolph Zaiman.

Correspondence.

To the Editor of Symons's Meteorological Magazine

MILD WINTER IN THE EASTERN UNITED STATES.

Up to the present the winter in this vicinity and generally in the eastern part of the country has been one of the mildest in many years. It has been a vivid and delightful contrast to that of 1917-1918, which was one of great severity, with heavy and continued snowfalls. So far I have measured only three-quarters of an inch of snow, while at the same period last year more than twenty inches had fallen. There have been no important storms, the depressions of the barometer being insignificant. Temperature has averaged well above the normal, the lowest minimum 9° against 5° below zero last year. January was genial, almost balmy, yet in Alaska great cold was experienced, temperature sinking to 62° below zero.

CHARLES DECKER.

Narberth, Pa., U.S.A., February 5th, 1919.

AN OLD WEATHER RECORD.

THE enclosed extract relates to the year 1667 :—

"Whereas upon the Thirteenth Day of October last, Between The hours of three and Four in the Afternoon it pleased the Lord to Visct the Town of Welbourn with a sad and Dreadfull Judgment, there was Thunder hail-stones as big as Pigeons Eggs. Congealed and Sharp pointed and some smart Cracks there was A Continued thunder for about a Quarter of an hour together And a tedious Dismal Storm Ensued that in Less then Four Minutes blew Down four and fourty Dwelling houses. as also their Barns Stables and hovels and Stacks and That which remained Spoiled with Rain that fell upon It before it Could Possibly be Gathered togather. The Werlwind Carried the Breadth of a Eleven or Twelve Score yards it had the Appearance of fire and a Sulphruas smell the Day wonder Full Dark and throw houses trees into all Quarters East West North and South. It pleased God to Spare their Lives but only one Youth that was Slain. The Close as above Mentioned as appears unto us by Certificate Subscribed by The Hands of Tho. Lumb John Rafer and Willm. Glascow who was appointed to View the same amounting to the value of Six hundred pounds fourteen Shillins."

The above describes a storm at Welbourn, in Lincolnshire. One of the chief occupiers was a George Blaney, amongst whose papers I have found this account. The Blaneys are ancestors of my paternal grandmother, and as I have many of their papers there seems no reason to doubt the genuiness of the above account.

Colmer Rectory, Alton, Hants., Jan. 27th, 1919. A. C. HERVEY.

REMARKABLE UNIFORMITY OF TEMPERATURE.

MR. H. K. G. ROGERS has drawn attention to the low range of temperature during the ten days, January 28th to February 6th, and it may be of some interest to compare with his result the figures for Headley, near Epsom about 575 ft. above sea-level.

		Max.	Min.			Max.	Min.
January	28th	32°·5	30°·9	February	2nd	29°·8	27°·7
,,	29th	33°·8	29°·0	,,	3rd	30°·8	28°·1
,,	30th	29°·2	29°·0	,,	4th	34°·8	28°·6
,,	31st	27°·8	24°·1	,,	5th	33°·4	29°·2
February	1st	30°·9	24°·8	,,	6th	35°·0	30°·3

Mean at Weybridge.	*Mean at Headley.*
33°·8 Max. 29°·4 Min. 4°·4 Range.	31°·8 Max. 28°·2 Min. 3°·9 Range.

An interesting point which I have long noted in cloudy weather of the north-easterly type, when the temperature range is small, is the marked frequency with which the maximum occurs at night. This happened here on no less than four out of the ten nights under review, viz., on January 29th, 31st, February 1st and 6th.

THEODORE E. R. PHILLIPS.

Headley Rectory, Epsom.

SNOWSTORM OF JANUARY 4th AND 5th.

With reference to my suggestion in the February number of "altitudinal outliers" of the snowfall in Kent, Surrey, and Sussex, I should be much interested to know whether Observers in those counties within sight of elevated tracts like the North and South Downs, Ashdown Forest, Leith Hill or Hindhead, noted any snow lying on the higher ground on the dates in question. I would like while writing to draw attention to an error in the fourth line of my letter in the February number, which resulted in the printing of north-west instead of south-west. I am particularly sorry about this because there is a great difference between the characteristic temperature of a W. and a S.W. wind in these islands, and a N.W. wind, taking the year through is, together with a N. wind, the coldest, being in summer cooler than N.E.

L. C. W. BONACINA.

Hampstead, March 2nd, 1919.

[Mr. D. W. Horner writes, in reference to the snowstorm of January 4th and 5th, that at Moretonhampstead, on the borders of Dartmoor, snow fell to a depth of 6 inches before 9 a.m. on the 5th, yielding ·68 in. in the rain gauge. The height above sea-level is 642 ft. At Ipplepen (273 ft.) there was no snow, only rain and sleet, ·96 in. being measured.—Ed., *S.M.M.*]

WEATHER MAPS IN NEWSPAPERS.

With regard to your very interesting article on the above subject, may I point out that although it was *The Times* that inaugurated the daily weather map in newspapers in 1875, it was to the enterprise of the *Daily News* that a system of telegraphic and railway weather reports was started as far back as 1849. May it not truly be said that these reports from various stations were the pioneers of the present-day weather map, or synoptic chart?

In connection with the fact that the *Morning Post* has now followed the example of *The Times* in reproducing a daily weather chart, it may be recalled that previous to the war the only other newspaper to emulate *The Times* was the short-lived *Tribune*, which used to print a weather map on the lines of those supplied to American newspapers by the United States Weather Bureau.

D. W. HORNER, F.R.Met.Soc.

Moretonhampstead, Devon, February 20th, 1919.

[The *Daily Telegraph* has now to be added to the list of daily papers issuing the 6 p.m. Meteorological Office Weather Map, covering the breadth of two columns. *The Times* has diminished the scale of its Weather Map to the breadth of one column, with some loss of distinctness.—Ed., *S.M.M.*]

SNOW FOLLOWING FINE WEATHER.

SUNDAY, March 2nd, was a glorious soft warm sunny day, a striking contrast to the previous weather. From observation of similar occurrences in previous years at this season I forecasted snow in three days. This came to-day, March 5th, when snow fell heavily for some hours in the afternoon. What is the explanation?

CHARLES P. HOOKER, F.R.Met.Soc.

Cirencester, March 5th, 1919.

WIND BACKING ROUND THE COMPASS.

ON January 8th, at 8 a.m., the wind was due S., at 8.30 it had backed to S.E., and I expected heavy rain from a depression passing to the south, but only a few hundredths of fine rain fell. The wind continued to back, and at 10 a.m. was E., at noon, N.E., at 1 p.m., N., and at 2 p.m. W. There was a calm all this time, but much gloom with cloud level 600-700 feet. There was a clearance from the W. at 2 p.m. and some sun afterwards, but no wind. At 5 p.m. it had gone to S.W., and at 7.30 p.m. it was back once more at due S. and freshening. I conclude this shift of wind all round the compass in less than twelve hours was due to a very shallow disturbance surrounded by deep ones. There was no fall of barometer, only a temporary cessation in its rise. At 10.30 p.m. heavy rain set in with a freshening southerly wind and falling barometer.

R. P. DANSEY.

Kentchurch Rectory, Hereford, January 9th, 1919.

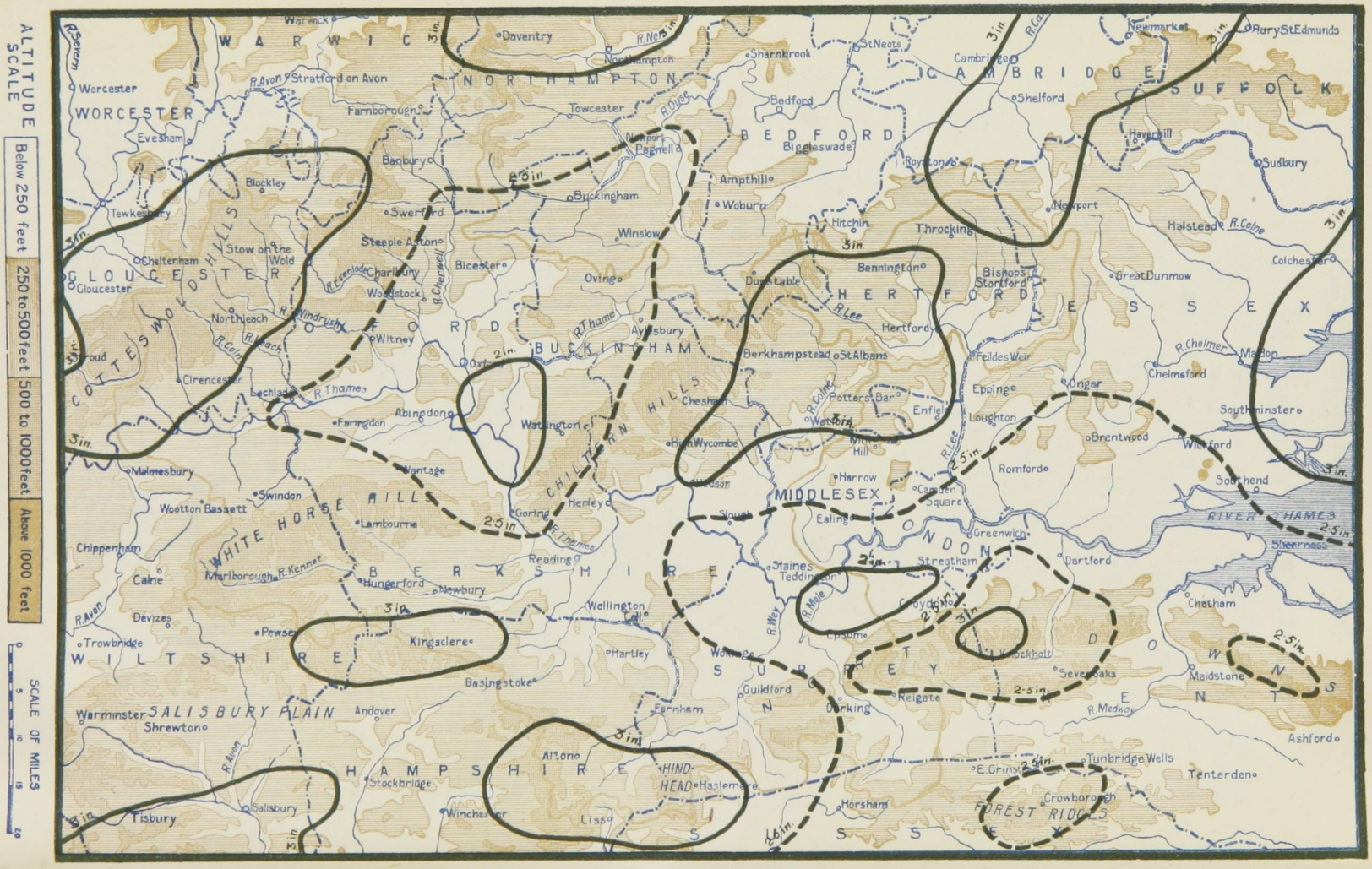
METEOROLOGICAL NEWS AND NOTES.

THE MUNSTER RAINFALL ASSOCIATION, founded by Mr. E. W. M. Murphy, of Cashel, co. Tipperary, has issued its first annual report, dealing with the rainfall of 1918. Records are given for the province of Munster and the adjoining counties, but the primary object of the Association is the encouragement of rainfall observing in Ireland generally, and we are glad to hear that a promising start has been made in the directon of securing the establishment of new stations.

ACTIVITY in establishing new rainfall stations is also manifesting itself in Wales, where the matter is being taken up by many of the County Councils, the observations being made in most cases at the schools. This is an example which we hope will be widely followed.

ERRATA.—In this Magazine for February, 1919, p. 3, the following corrections are required in Mr. Bonacina's letter on the Snowstorm of January 4th and 5th. Line 4, *for* north-west *read* south-west. Line 9, *for* night *read* right. Lines 20 and 26, *for* outlines *read* outliers.

THAMES VALLEY RAINFALL. FEBRUARY. 1919.



Symons's Meteorological Magazine

Watershed of River Thames above Taddington, and River Lee above Feildes Weir

Isohyetals

THE WEATHER OF FEBRUARY.

A SHORT spell of cold easterly winds at the beginning of the month (a legacy from January) was followed on Febuary 4th by the arrival of a cyclonic disturbance off the Irish coasts. Over a large portion of the country the wind therefore veered temporarily to the southward, and between the 5th and 7th the thermometer in most of the western districts rose above 50°, a reading as high as 56° being recorded at Killarney. On the 6th, the formation of a small secondary disturbance near the mouth of the English Channel was attended by heavy rain in Devon and Cornwall, the system afterwards moving south-eastwards across France to the Mediterranean.

A large anticyclone now began to extend from Northern Europe, and between about the 7th and 13th practically the whole of Great Britain was under the influence of a frost, which in spite of its comparative brevity, was sufficiently severe to permit of the indulgence of skating in nearly all districts. The lowest temperatures were observed between the 8th and 11th, when the sheltered thermometer fell below 20° at nearly all inland stations, a reading as low as 5° being recorded at West Linton, and a reading of 9° at Raunds. On the surface of the grass the thermometer naturally went a few degrees lower, and at Hemel Hempstead, early on the 9th, it touched zero Fahr. In several places there were three or four consecutive days upon which the thermometer in the screen failed to reach the freezing point all day. A good deal of night and morning fog was experienced at the time over eastern and central England, but with those exceptions the weather was exceedingly fine, the total duration of bright sunshine in the week ended the 15th being equal to considerably more than half the possible at many coast stations in the west and south. In the north the air was sometimes exceedingly dry; at Eskdalemuir the relative humidity on the 9th and 10th sank respectively to a minimum of 17 per cent. and 18 per cent.

During the latter half of the month the weather was influenced for the most part by depressions which advanced eastwards over the southern half of the United Kingdom. In the north, where the wind was usually from some easterly quarter, the weather remained essentially wintry, sharp frosts being experienced in Scotland about the nights of the 17th and 27ths. Further south the wind was more variable, but even there the thermometer seldom reached its average level, snow being experienced in nearly all parts of the kingdom between the 16th and 18th, and again in many northern and central districts, between the 26th and 28th.

Bright sunshine exceeded the average in many western districts but was below it in the east; at Kew Observatory the total duration for the month amounted to little more than half the usual February allowance. On the night of the 27th a brillant display of aurora was observed in nearly all the western and northern districts, and on the following night it was again seen in Scotland.

The rainfall was above the average over the greater part of England and Wales, except in the north-west, and below the average over Scotland and Ireland. In the south and east of England some stations had nearly twice the average fall. The deficiency was most marked in the English Lake District and in the normally rainy areas of Scotland. The total was less than 4 inches over the whole of Great Britain except South Wales, Devon and Cornwall. North of a line joining the Mersey and the Wash, it was less than 2 inches, except at a few scattered stations where this amount was slightly exceeded. Many stations in the north-east of Ireland had less than an inch of rain, and 3 inches was only exceeded in the south and west. The general rainfall expressed as as a percentage of the average was :—England and Wales, 103; Scotland, 38; Ireland, 69; British Isles, 71.

In London (Camden Square), the mean temperature was 35°·6 being 4°·1 below the average, and 2°·2 lower than in January. The duration of sunshine was 11·3 hours, and of rain, 71·3 hours. Evaporation ·13 inch.

RAINFALL TABLE FOR FEBRUARY, 1919.

STATION.	COUNTY.	RAINFALL. Aver. 1875–1909. in.	1919. in.	Diff. from Av. in.	Per cent. of Av.	Max. in 24 hours. in.	Date.	Nos. of Day
Camden Square	*London*	1·66	2·64	+ ·98	159	·64	16	14
Tenterden	*Kent*	1·90	2·30	+ ·40	121	·53	16	16
Arundel (Patching)	*Sussex*	2·17	2·77	+ ·60	128	·60	19	11
Fordingbridge (Oaklands)	*Hampshire*	2·34	3·23	+ ·89	138	·95	16	17
Oxford (Magdalen College)	*Oxfordshire*	1·62	2·10	+ ·48	130	·69	16	14
Wellingborough (Swanspool)	*Northampn*	1·70	2·43	+ ·73	143	·82	16	12
Bury St. Edmunds (Westley)	*Suffolk*	1·59	2·97	+1·38	186	·76	17	12
Geldeston [Beccles]	*Norfolk*	1·41	2·07	+ ·66	147	·60	16	16
Polapit Tamar [Launceston]	*Devon*	2·95	3·35	+ ·40	114	·70	16	15
Rousdon [Lyme Regis]	,,	2·50	4·58	+2·08	183	1·08	16	13
Stroud (Field Place)	*Gloucester*	2·12	2·88	+ ·76	136	·91	14	...
Church Stretton (Wolstaston)	*Shropshire*	2·17	...	...	...	...	...	...
Boston	*Lincoln*	1·53	2·40	+ ·87	157	1·00	16	11
Worksop (Hodsock Priory)	*Nottingham*	1·64	2·63	+ ·99	160	·93	16	12
Mickleover Manor	*Derbyshire*	1·71	2·22	+ .51	130	·52	17	9
Congleton (Buglawton Vic.)	*Cheshire*	1·95	·91	—1·04	47	·26	21	11
Southport (Hesketh Park)	*Lancashire*	2·07	1·10	— ·97	53	·50	19	8
Wetherby (Ribston Hall)	*York, W.R.*	1·71	1·55	— ·16	91	·53	16	8
Hull (Pearson Park)	,, *E.R.*	1·78	1·91	+ ·13	107	·73	16	14
Newcastle (Town Moor)	*North'land*	1·63	2·22	+ ·59	136	·36	20	15
Borrowdale (Seathwaite)	*Cumberland*	10·96	1·57	—9·39	14	...	...	...
Cardiff (Ely)	*Glamorgan*	3·07	4·52	+1·45	147	1·13	21	15
Haverfordwest	*Pembroke*	3·42	3·97	+ ·55	116	·77	21	17
Aberystwyth (Gogerddan)	*Cardigan*	3·09	2·62	— ·47	85	·52	19	8
Llandudno	*Carnarvon*	2·11	1·19	— ·92	56	·28	22	12
Cargen [Dumfries]	*Kirkcudbrt.*	3·42	1·28	—2·14	37	·41	15	8
Marchmont House	*Berwick*	2·15	3·04	+ ·89	141	·67	20	17
Girvan (Pinmore)	*Ayr*	3·87	1·06	—2·81	27	·75	23	5
Glasgow (Queen's Park)	*Renfrew*	2·70	·60	—2·10	22	·30	15	4
Islay (Eallabus)	*Argyll*	3·91	1·22	—2·69	31	·27	6	11
Mull (Quinish)	,,	4·45	1·08	—3·37	24	·36	22	11
Loch Dhu	*Perth*	6·69	1·60	—5·09	24	·40	15	9
Dundee (Eastern Necropolis)	*Forfar*	1·91	1·86	— ·05	97	·35	22	15
Braemar	*Aberdeen*	2·55	1·09	—1·46	43	·41	20	7
Aberdeen (Cranford)	,,	2·36	1·97	— ·39	83	·50	20	16
Gordon Castle	*Moray*	1·95	1·55	— ·40	80	...	...	...
Drumnadrochit	*Inverness*	2·89	1·07	—1·82	37	·38	22	11
Fort William	,,	6·85	·64	—6·21	9	·19	18	9
Loch Torridon (Bendamph)	*Ross*	7·53	1·40	—6·13	19	·39	22	8
Dunrobin Castle	*Sutherland*	2·58	1·92	— ·66	74	·46	15	7
Glanmire (Lota Lodge)	*Cork*	3·76	3·93	+ ·17	105	·75	18	14
Killarney (District Asylum)	*Kerry*	4·99	2·36	—2·63	47	·55	22	15
Waterford (Brook Lodge)	*Waterford*	3·18	4.01	+ ·83	126	·86	4	16
Nenagh (Castle Lough)	*Tipperary*	2·89	2·03	— ·86	70	·51	21	11
Ennistymon House	*Clare*	3·44	2.56	— ·88	74	·41	6	13
Gorey (Courtown House)	*Wexford*	2·75	3·53	+ ·78	128	·45	4	16
Abbey Leix (Blandsfort)	*Queen's Co.*	2·55	1·96	— ·59	77	·54	21	15
Dublin (Fitz William Square)	*Dublin*	1·93	1·40	— ·53	73	·26	5	16
Mullingar (Belvedere)	*Westmeath*	2·67	1·87	— ·80	70	·38	21	12
Crossmolina (Enniscoe)	*Mayo*	4·20	2·14	—2·06	51	·38	5	16
Cong (The Glebe)	,,	3·72						
Collooney (Markree Obsy.)	*Sligo*	3·20	1·23	—1·97	38	·30	6	12
Seaforde	*Down*	2·81	1·99	— ·82	71	56	15	12
Ballymena (Harryville)	*Antrim*	2·99	·66	—2·33	22	·17	19	9
Omagh (Edenfel)	*Tyrone*	2·68	·86	—1·82	32	.40	7	5

SUPPLEMENTARY RAINFALL, FEBRUARY, 1919.

Div.	STATION.	Rain inches.	Div.	STATION.	Rain inches
II.	Warlingham, Redvers Road..	3·21	XI.	Lligwy	1·28
,,	Ramsgate	1·93	,,	Douglas, Isle of Man	1·57
,,	Hailsham	2·92	XII.	Stoneykirk, Ardwell House...	·93
,,	Totland Bay, Aston House...	2·83	,,	Carsphairn, Shiel	1·08
,,	Stockbridge, Ashley..	2·61	,,	Langholm, Drove Road	·99
,,	Grayshott	3·27	XIII.	Selkirk, The Hangingshaw..	1·55
,,	Upton Nervet	2·71	,,	North Berwick Reservoir.....	1·92
III.	Harrow Weald, Hill House...	2·84	,,	Edinburgh, Royal Observaty.	1·75
,,	Pitsford, Sedgebrook.....	3·30	XIV.	Biggar.....	·58
,,	Woburn, Milton Bryant.....	2·96	,,	Maybole, Knockdon Farm ...	·12
,,	Chatteris, The Priory.....	2·73	XV.	Shiskine	1·36
IV.	Elsenham, Gaunts End	2·92	,,	Ardgour House	1·06
,,	Shoeburyness	2·25	,,	Oban.....	1·17
,,	Colchester, Hill Ho., Lexden	2·98	,,	Holy Loch, Ardnadam.....	1·18
,,	Aylsham, Rippon Hall.... ..	2·75	,,	Loch Venachar.....	·70
,,	Swaffham	2·57	XVI.	Glenquey	1·30
V.	Bishops Cannings	2·29	,,	Loch Rannoch, Dall	·53
,,	Weymouth.....	3·67	,,	Blair Atholl	·97
,,	Ashburton, Druid House.....	9·03	,,	Coupar Angus	1·21
,,	Cullompton	3·58	,,	Montrose, Sunnyside Asylum.	2·15
,,	Lynmouth, Rock House	3·31	XVII.	Balmoral	1·45
,,	Okehampton, Oaklands... ...	3·65	,,	Fyvie Castle	1·91
,,	Hartland Abbey.....	3·83	,,	Keith Station	1·78
,,	St. Austell, Trevarna	7·51	XVIII.	Rothiemurchus	·66
,,	North Cadbury Rectory.....	2·49	,,	Loch Quoich, Loan	·95
VI.	Clifton, Stoke Bishop	3·27	,,	Skye, Dunvegan	2·02
,,	Ledbury, Underdown..... ...	3·22	,,	Fortrose.....	1·31
,,	Shifnal, Hatton Grange.....	2·48	,,	Glencarron Lodge	1·09
,,	Droitwich.....	2·19	XIX.	Tongue Manse	1·94
,,	Blockley, Upton Wold.....	3·42	,,	Melvich	1·41
VII.	Grantham, Saltersford.....	2·81	,,	Loch More, Achfary	2·00
,,	Louth Westgate	2·90	XX.	Dunmanway, The Rectory ..	5·76
,,	Bawtry, Hesley Hall	2·27	,,	Mitchelstown Castle.....	2·80
,,	Derby, Midland Railway.....	2·30	,,	Gearahameen	4·80
VIII.	Nantwich, Dorfold Hall	1·73	,,	Darrynane Abbey.....	4·64
,,	Bolton, Queen's Park	1·15	,,	Clonmel, Bruce Villa	2·22
,,	Lancaster, Strathspey	1·68	,,	Roscrea Timoney Park	2·13
IX.	Langsett Moor, Up. Midhope	2·26	,,	Broadford, Hurdlestown.....	1·75
,,	West Witton	2·17	XXI.	Enniscorthy, Ballyhyland...	4·01
,,	Scarborough, Scalby	1·69	,,	Rathnew, Clonmannon	3·26
,,	Ingleby Greenhow	1·45	,,	Hacketstown Rectory	2·45
,,	Mickleton	1·80	,,	Ballycumber, Moorock Lodge	1·53
X.	Bellingham, High Green Manor	2·02	,,	Balbriggan, Ardgillan	1·65
,,	Ilderton, Lilburn Cottage ...	1·98	,,	Castle Forbes Gardens.....	1·57
,,	Keswick, The Bank.....	·70	XXII.	Ballynahinch Castle.....	3·02
,,	Orton.....	1·36	,,	Woodlawn	1·60
XI.	Llanfrechfa Grange	5·96	,,	Westport House	1·70
,,	Treherbert, Tyn-y-waun	7·21	,,	Dugort, Slievemore Hotel ...	2·46
,,	Carmarthen, The Friary	3·90	XXIII.	Enniskillen, Portora.....	·97
,,	Fishguard, Goodwick Station.	2·29	,,	Dartrey [Cootehill]	1·18
,,	Crickhowell, Tal-y-maes.....	4·00	,,	Warrenpoint, Manor House ..	1·59
,,	Birmingham WW., Tyrmynydd	3·98	,,	Belfast, Cave Hill Road	1·65
,,	Lake Vyrnwy	3·17	,,	Glenarm Castle	3·24
,,	Llangynhafal, Plas Drâw.....	2 93	,,	Londonderry, Creggan Res...	1·06
,,	Rhiwbryfdir	3·25	,,	Milford Manse	1·15
,,	Dolgelly, Bryntirion.....	2·81	,,	Killybegs	1·50

Climatological Table for the British Empire, September, 1918.

STATIONS. (*Those in italics are South of the Equator.*)	Absolute. Maximum. Temp.	Date.	Minimum. Temp.	Date.	Average. Max.	Min.	Dew Point.	Humidity.	Absolute. Max. in Sun.	Min. on Grass.	Total Rain. Depth.	Days.	Aver. Cloud.
	°		°		°	°	°	0-100	°	°	inches		
London, Camden Square	72·3	6	37·2	29	64·8	49·5	...	82	86·0	34·0	5·68	24	6·0
Malta	95·0	8	61·0	29	85·1	72·5	...	77	140·0	60·5	·80	2	0·4
Lagos	87·3	16	70·0	19	84·7	74·0	72·8	80	158·3	66·0	3·71	16	7·1
Cape Town	82·9	2	38·5	23	67·5	51·5	52·1	77	...	...	1·86	13	5·7
Johannesburg	78·9	11	37·0	7	71·4	51·1	42·8	61	...	34·0	·95	4	3·5
Mauritius	78·0	26*a*	55·0	10	76·0	61·0	58·0	70	...	49·0	·90	16	5·6
Bloemfontein	84·1	22*b*	34·8	6	72·6	46·3	43·9	61	..	...	2·25	7	5·6
Calcutta...	94·4	19	74·9	27	90·1	78·6	77·8	84	...	73·4	9·31	14	7·9
Madras	101·1	7	72·8	23	94·5	78·1	74·7	77	166·9	71·9	3·25	8	6·2
Colombo, Ceylon ...	88·1	17	72·8	18	86·8	76·7	71·7	76	164·8	68·5	1·06	11	7·6
Hongkong	89·8	11	72·4	30	83·5	76·5	73·2	81	...	...	18·45	17	6·4
Melbourne	81·3	26	34·2	7	64·9	45·7	43·1	61	133·1	22·8	3·44	14	4·3
Adelaide	86·8	26	38·2	22	68·4	47·2	45·4	60	145·1	28·3	·66	7	...
Coolgardie	93·0	30	37·5	4	75·9	48·7	42·4	44	155·5	33·5	·11	2	4·0
Brisbane	82·1	28	45·9	2	74·5	53·5	52·2	65	141·4	39·1	1·98	5	5·1
Hobart, Tasmania .	77·9	26	35·1	7	59·6	44·2	39·2	58	132·9	26·3	2·60	16	5·4
Wellington ...	62·8	27	36·2	11	56·4	46·0	44·3	73	131·0	24·5	3·51	14	7·2
Jamaica, Kingston ..	91·9	7	71·2	27	90·0	73·9	72·3	78	...	...	·30	3	4·3
Grenada	90·0	4	72·0	13*c*	86·0	76·0	...	76	138·0	...	9·80	15	3·5
Toronto	80·6	3	39·0	22	65·6	47·3	47·9	84	131·2	34·0	4·64	18	5·8
Fredericton	77·0	3	30·8	12	65·5	45·1	49·1	80	...	...	8·02	15	5·4
St. John, N.B. ...	74·5	6	36·5	11	62·0	49·2	50·1	83	133·3	31·3	7·00	13	6·1
Victoria, B.C.	82·8	28	44·2	24	68·6	51·2	49·0	72	136·0	38·0	·10	2	2·4

a—27, 29. *b*—23. *c*—19.

Johannesburg.—Bright sunshine 267·2 hours.

COLOMBO, CEYLON.—Mean temp. 81°·7, or 0°·7 above, dew point 1°·7 below, and R 3·48 in. below, averages. Mean hourly velocity of wind 5·6 miles.

HONGKONG.—Mean temp. 79°·6. Bright sunshine 171·3 hours. Mean hourly velocity of wind 11·5 miles.

Melbourne.—Mean temp. 1°·3 above, and R 1·02 in. above, averages.

Adelaide.—Mean temp. 0°·8 above, and R ·66 in. below, averages. The lowest September fall with two exceptions in past 79 years.

Coolgardie.—Temp. 3°·6 above, and R from ·25 to ·50 in. below, averages.

Brisbane.—Temp. and R slightly below averages.

Hobart.—Temp. and R above averages.

Wellington.—Mean temp. 0°·3 below, and R ·63 in. below, averages. Bright sunshine, 148·5 hours. TS and H on the 18th.